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ABSTRACT

The Effects of Vocational Education study was conducted to organize and synthesize all studies conducted between 1968 and 1979 that dealt with the effects of participating in vocational education. Its framework was developed primarily from the various goals for vocational education specified in the federal legislation and on previous research. Three major categories of dependent variables were selected to organize and summarize study findings: employment/unemployment variables, educational effects of vocational education training, and ancillary effects variables. All studies identified underwent a three-stage screening process: scanning of title and document abstracts, determining relevancy of data in actual document, and categorizing studies according to scope, level, and minimum methodological criteria. The approximately 232 reports selected were abstracted, summarized, and classified as more rigorous, less rigorous, and national studies. Certain persistent methodological problems were found in the studies included in the meta-evaluation regarding self-selection bias, definition of program, identification of students, reliability and validity of outcome measures, and contextual factors. Limitations were also found in the methodology of the meta-evaluation, including inadequate conceptual framework, incomplete search process, no critical assessment of studies, and conclusions not based on synthesis of adequate data. (Two tables are attached.) (YLB)

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A Review and Analysis of the Meta-Evaluation Study: "The Effects of Participating in Vocational Education"

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Statement of the Problem

An area of study receiving a great deal of attention today is that of evaluation of evaluations, or what has come to be known as "meta evaluation." Studies concerned with a secondary analysis of data from earlier evaluations are subsets of meta evaluations, and have started to show up in the published literature. One such study, "The Effects of Participation in Vocational Education," Mertens, McElwain, Garcia and Whitmore (1980), was recently conducted by the National Center for Research in Vocational Education. This study had as its primary purpose organizing and synthesizing all studies conducted between 1968 and 1979 that dealt with the effects of participating in vocational education.

The specific emphasis of this paper is to review, analyze, and discuss the methodology, findings, and implications of the study described above. Because this study represents a monumental event and undertaking in evaluation research, especially in vocational education, it will have a great deal of impact on the future of vocational education programs. The specific focus of this presentation will center on both the procedures and conclusions reported. A critical discussion of the "meta analytical" techniques used in the conduct of the study will contribute to a greater understanding of the results as well as lead to improved reviews of the literature and better evaluative research.

Framework and Rationale

The basic meta analytic approach of the Effects of Vocational Education study involved a critical review and summary of all studies identified and obtained since 1968 providing information on selected key variables. The framework employed in the study was developed primarily from the various

goals for vocational education specified in the federal legislation and on previous research. This research, focusing on the identification of appropriate outcome measures for vocational education had been conducted by Darcy et. al, (1979) and McKinney et.al (1978) at the National Center for Research in Vocational Education.

Three major sets of dependent variables were selected to organize and summarize the findings presented in the study. These major categories of dependent variables included: employment/unemployment variables, the educational effects of vocational education training, and ancillary effects variables. The numerous studies reviewed were further broken down by federal, state, or local level (see Table 1).

Summary of Methods and Procedures

Studies included and reviewed in the Effects Study were identified through computerized searches and manual searches of card catalogs at the National Center and Ohio State libraries. The identification and review process yielded over 1500 studies. The results of the computerized searches were cross-checked against various bibliographic sources. In addition to the searches, solicitations were made to all states for reports dealing with the effects of vocational education. Additional letters to state directors of vocational education, RCU directors, and State Advisory Councils for vocational education were sent for the purpose of soliciting reports not in the ERIC system on the effects of Vocational Education.

As studies were identified, a three stage screening process was developed and employed to identify relevant and methodologically rigorous studies containing data on the effects of vocational education. Stage one of the screening process involved the scanning of titles and documents abstracted.

Stage two was conducted using the actual document to determine the relevancy of the data in the study identified. Stage three categorized all studies according to scope, level, and minimum methodological criteria. The results of the screening and review process yielded approximately 232 reports containing relevant data on the major dependent variables selected. Following the screening process, detailed critical summaries of the studies identified were prepared for the purpose of synthesizing the information. These studies were abstracted, summarized, and classified as more rigorous, less rigorous, and national studies.

For each of the more rigorous studies identified, a set of detailed notes was prepared in order to assess the adequacy of each study. Studies were classified as "more rigorous" if: a) they had a large enough sample, b) they contained an adequate description of the methodology employed, c) they had a minimum response rate of 40 percent, or d) if they included a comparative group. The method of synthesizing the results varied depending upon the variables assessed and the presence or absence of a comparison group in the studies selected. In the cases where the comparison criterion was not utilized, descriptive summaries of the results were provided.

Results

Table 2 depicts the findings and results of the Effects Study by major category, selected variables investigated, and level of vocational training. Although evidence was conclusive with respect to some variables, evidence on other variables was inconclusive or yielded mixed results. In general, with respect to the effects of vocational training, the major findings of the study indicated that:

- vocational education is providing meaningful employment-related education for many persons since participation in vocational education was related to higher levels of employment

- employers and vocational program graduates were reported as being satisfied with the quality of training received
- the job-related placement rate of secondary and postsecondary vocational program graduates was reported as being high
- the effects of vocational education on participants relative to academic achievement, occupational achievement, continuing education, attendance and dropout, and and the ancillary effects variables were inconclusive and in need of further research.

An examination of Table 2 also reveals that less research was found at the postsecondary level than at the secondary level. Additionally, less research and findings were reported for the ancillary effects variables than for the education, training, and employment variables.

Discussion

Any meta-evaluation undertaken in a field as broad and diverse as vocational education is likely to suffer from shortcomings. This discussion, in order to provide further insights into the problems encountered in conducting a meta-evaluation in vocational education, will focus on the problems encountered in The Effect of Participating in Vocational Education study. The discussion is divided into two parts: (1) a critique of the studies in vocational education that were included in the meta-evaluation, and (2) a critique of the methodology of the meta-evaluation itself.

Vocational Education Evaluation Studies

From the review of studies which examine some outcome or effect of vocational education certain persistent methodological problems are apparent. These problems are briefly described in the Mertens et al. (1980, p.p. 15-16) report and are discussed here under five general categories: self-selection bias, definition of program, identification of students, reliability and validity of outcome measures and contextual factors.

Self-selection bias. Because students do not randomly select themselves into vocational and non-vocational curricula there is no way of knowing if any of the characteristics measured as outcomes resulted from the respective programs or were the cause of the selection of program. This problem was apparent in all of the studies reviewed and was seldom controlled for through comparative group designs or analysis of covariance.

Definition of program. Vocational education is not a single treatment and, in fact, no two vocational education programs are likely to be very similar. Not only do they differ in prescribed content (e.g. agricultural education vs. trade and industrial education) but even within the same occupational area the differences in program due to teacher, physical plant, specific curriculum etc. are likely to be great. While some of the evaluation studies reviewed tried to provide some description of program, most did not. Even in the best case, it is not likely that all significant aspects of a program could be described well enough to replicate a study.

Identification of students. Who is and is not a vocational student? The answer to this question is difficult to obtain when large numbers of students are being studied. In many cases, the students themselves don't know if they are in a vocational program although self-report is often used in classifying students in program evaluation studies. At the post-secondary level the uncertainty may be even greater. In many cases, students may be counted as vocational because this classification results in greater reimbursement. Most studies reported did not use any extraordinary methods to verify students program status.

Reliability and validity of outcome measures. In the best of studies, the dependent variable suffers from some degree of unreliability and may not be perfectly valid. In studies which rely on mailed questionnaires, opinion, self-report and similar measures, the degree of unreliability and

invalidity is likely to be relatively greater than when objective measures are administered under controlled conditions. In very few studies were efforts taken to obtain independent estimates of reliability and validity of outcome measures.

Contextual factors. In the evaluation of educational treatments there are numerous intervening or contextual variables which are likely to influence the outcome, perhaps as much as the treatment. As students leave the school and outcome measures are obtained in the work world these intervening influences become greater. Few of the studies reported were able to account for even a small number of these influences.

The Meta-Evaluation

The researchers conducting this meta-evaluation had to cope with the many problems involved in combining data from numerous evaluation efforts conducted over a ten year period by many different investigators with all of the limitations described above. In light of these ever present problems it is a tribute to the courage of the researchers that they undertook the effort at all. Not only was the job difficult to do well, it possessed some inherent dangers of having a no win potential from a political point of view. That is, if the researchers applied the strictest research standards to the acceptance of any evidence that vocational education had a positive effect the likelihood was that no evidence of an effect would be found. In this case, the researchers would be condemned by their fellow vocational educators for failing to find the benefits we all know exist. On the other hand, should the researchers give the benefit of the doubt to methodological problems encountered in all of the studies reviewed and conclude that many effects of vocational education had been discovered they stood to be con-

demned by the research community for accepting shoddy research methods. It is in the context of this dilemma that a critique of the meta-evaluation is offered. Some of the limitations discussed here are apparent from the report, while others became evident during the conduct of the study.

Inadequate Conceptual Framework - Although a conceptual framework for the meta-evaulation was created and can be seen most easily in table 1 in this report, it probably is not adequate to deal with all of the component parts of a study of this magnitude. Dividing the studies into major outcomes, secondary vs. post secondary and degrees of rigor was helpful, but it does not go far enough toward providing a framework for grouping studies. Also, the addition of national studies as another category cut across the other divisions. The major flaw in the conceptual framework may lie in grouping the many dissimilar programs together just because they happened to fall within a category. For example, the employment outcomes of two programs such as commercial art and industrial cooperative training are likely to be totally different, with one having very low employment outcomes and the other very high. Under the model used to study employment outcomes, an average outcome might be obtained which would not be characteristic of either. To be useful, the effects of vocational education would need to be subdivided for study into as many different categories as there are recognizably different treatments. While this creates monumental problems in conducting and reporting the meta-evaluation, simplifying the structure in ways that do not reflect the reality of programs as they actually exist does no one any good.

Search process not complete - The search process as described on pages 7 and 8 of the report utilized the conventional computer search approach through ERIC supplemented with other hand searches and cross checks. Although the procedures used were reasonable, and represent what may be considered state-of-the-art, a look at the studies selected for review by consultants outside the

process turned up studies not included that met all the criteria for inclusion. The main problem here appears to be shortcomings in the ERIC descriptor process coupled with the project staff not being familiar with the literature in all of the sub-fields within vocational education.

No critical assessment of studies - The total number of studies selected for final review, and upon which the conclusions of the meta-evaluation are based, was 232. These studies were further divided into more rigorous (82), less rigorous (105), national (35) and review and synthesis studies (10). The decision on rigor was made using four technical criteria: sample size greater than 25, methodology described in detail, response rate greater than 40% and a standard of comparison used. If a study met the criteria, it was classified as rigorous, and no attempt was made to determine if anything about the study may have invalidated the results. Apparently, no secondary analysis was attempted with data from any of the studies, and findings reported were accepted as stated. In light of all of the problems noted in the first section of this discussion, the opportunities for inappropriate conclusions about vocational education outcomes are vast.

Conclusions not based on synthesis of adequate data - Conclusions from all of the 232 studies reviewed appear on pages 75 through 84. These are described by the fifteen categories of outcome which appear in Table 1. As can be seen from the table, many of the categories have few studies; however, conclusions are reported for all categories. For example, under citizenship for secondary level, two more rigorous and two less rigorous studies are listed. On page 81 of the report, these four studies are briefly described without reference to rigor, and this skimpy evidence is offered as some knowledge of the citizenship outcomes of vocational education. In general, very little synthesis is evident for any of the other categories, and conclusions about the out-

comes of vocational education are offered without the concept of rigor playing any role in the interpretation of the credibility of the findings.

Conclusion

This critique of the meta-evaluation of studies pertaining to the effects of participating in vocational education is offered with the understanding that it would have been difficult to do the job any better under the circumstances. This observation leads the authors of this paper to the inescapable conclusion that it may not be possible to conduct a quality meta-evaluation over such a diverse set of programs. The one recommendation that grows from this feeling is that future meta-evaluations of vocational education should be conducted within a fairly small and relatively homogeneous subset of the field (e.g. secondary level agricultural education in the south, auto mechanics programs at the post secondary level, etc.) and that the research staff should be well versed in the area under study. This recommendation may be applicable to many non-vocational areas of education as well.

References

Darcey, Robert L., et al. Examining Vocational Education Outcomes and Their Correlates. Columbus, Ohio: The National Center for Research in Vocational Education, The Ohio State University, 1979.

McKinney, Floyd L. and Harvey, Beth. Viewpoints on Interpreting Outcome Measures in Vocational Education. Columbus, Ohio: The National Center for Research in Vocational Education, The Ohio State University, 1978.

Mertens, Donna M., et al. Effects of Vocational Education: Abstracts of Rejected Titles. Columbus, Ohio: The National Center for Research in Vocational Education, The Ohio State University, 1980.

Mertens, Donna M., et al. Effects of Vocational Education: Bibliography of Rejected Titles. Columbus, Ohio: The National Center for Research in Vocational Education, The Ohio State University, 1980.

Mertens, Donna M., et al. Effects of Vocational Education: Bibliography of Rejected Titles. Columbus, Ohio: The National Center for Research in Vocational Education, The Ohio State University, 1980.

Mertens, Donna M., et al. McElwain, Douglas, Garcia, Gonzalo, and Whitmore, Mark. The Effects of Participating in Vocational Education. Columbus, Ohio: The National Center for Research in Vocational Education, The Ohio State University, 1980. (Research and Development Series No. 202)

NOTE: Gonzalo Garcia served as a Research Assistant and Jerome T. Kapes was a consultant to the National Center for Research in Vocational Education working on the meta-evaluation project described and discussed in this paper.

TABLE 1*

SUMMARY FRAMEWORK FOR EXAMINING EFFECT STUDIES

Major Outcome/Component	Type of Study					
	Secondary			Postsecondary		
	More Rigorous	Less Rigorous	National	More Rigorous	Less Rigorous	National
I. Employment						
A. Unemployment and Employment	28	21	9	25	16	1
B. Occupation Related to Training	18	30	3	20	19	1
C. Earnings	17	13	3	13	20	0
D. Employee Satisfaction ° Attitudes Toward Work	8	6	1	4	3	1
E. Employer Satisfaction ° Work Habits	10	12	0	3	10	0
II. Education						
A. Basic Educational Skills	1	4	0	0	0	0
B. Academic Achievement	1	4	4	2	0	0
C. Specific Occupational Skills	2	2	0	1	1	0
D. School Attendance and Dropout Rates	7	6	3	0	4	1
E. Continuing Education	29	19	6	4	15	0
F. Satisfaction with Training	21	9	2	16	9	0
III. Ancillary Effects						
A. Aspirations	2	2	4	1	0	0
B. Attitudes and Values	5	3	2	0	1	0
C. Feelings of Success	1	1	2	0	0	0
D. Citizenship	2	2	0	0	2	0

*SOURCE: Table 2 taken from The Effects of Participation in Vocational Education: Summary of Studies Reported Since 1968 by Mertens, D. et al., National Center for Research in Vocational Education, Columbus, Ohio, 1980.

TABLE 2

SUMMARY OF THE MAJOR FINDINGS OF THE EFFECTS STUDY BY CATEGORIES, VARIABLES, AND LEVEL OF TRAINING

Category	Variables	Level of Training: Secondary	Level of Training: Postsecondary
I. Employment			
	A. Employment	A higher percentage of vocational graduates are employed upon graduation	-----*
	B. Unemployment	-----	Postsecondary vocational graduates had lower unemployment rates
	C. Occupation Related to Training	The majority of vocational graduates obtain employment related to occupational area in which trained	The majority of postsecondary vocational graduates find jobs in training related areas
	D. Earnings	Secondary vocational graduates enjoy an initial earnings advantage	-----
	E. Employee Satisfaction	Secondary vocational graduates are satisfied with their jobs	Postsecondary vocational graduates are satisfied with their jobs
	F. Employer Satisfaction	Employers are satisfied with secondary vocational graduates	Employers are satisfied with postsecondary vocational graduates
II. Education and Training			
	A. Basic Skill Attainment	-----	-----
	B. Academic Achievement	Academic students showed higher achievement than general or vocational students	-----

TABLE 2 - Continued

Category	Variables	Level of Training: Secondary	Level of Training: Postsecondary
	C. Occupational Skill Attainment	-----	-----
	D. Attendance/Dropout	-----	-----
	E. Continuing Education	Twice as many nonvocational students continue their education than vocational students	A low percentage (less than 10%) of postsecondary vocational graduates continue their education
	F. Satisfaction with training	The majority (80 - 90%) of vocational students are satisfied with their training	The majority of postsecondary graduates are satisfied with their training
III. Ancillary Effects			
	A. Aspirations	Fewer vocational than nonvocational students plan to attend college	-----
	B. Attitudes and Values	Vocational students feel positive about the information received	-----
	C. Feelings of Success	-----	-----
	D. Citizenship	Vocational and nonvocational students do not differ with respect to voting behavior	-----

SOURCE: Findings taken from The Effects of Participation in Vocational Education: Summary of Studies Reported Since 1968 by Mertens, D. et al., National Center for Research in Vocational Education, Columbus, Ohio, 1980.

*NOTE: A dash (-----) indicates no conclusions were drawn due to insufficient data or mixed results.